



Lockheed Martin Idaho Technologies Company  
P.O. Box 1625 Idaho Falls, ID 83415

September 30, 1998

Distribution

TRANSMITTAL COPY OF *EVALUATION OF NONDESTRUCTIVE ASSAY/NONDESTRUCTIVE EXAMINATION CAPABILITIES FOR DEPARTMENT OF ENERGY SPENT NUCLEAR FUEL*, SEPTEMBER 1998, DOE/SNF/REP-030 REVISION 0 - DLB-86-98

Enclosed is a copy of the report *Evaluation of Nondestructive Assay/Nondestructive Examination Capabilities for Department of Energy Spent Nuclear Fuel*, September 1998, DOE/SNF/REP-030 Revision 0. This report evaluates the potential role of NDA/NDE systems in the characterization and certification of DOE SNF. The conclusions of this report are summarized as follows:

- We conclude that NDA/NDE systems are capable of playing a key role in the characterization and certification of DOE SNF, either as the primary data source or as a confirmatory test.
- The above conclusion depends on the capabilities of one system. If this one system is excluded from consideration for any reason, then the remaining systems can measure fewer key SNF properties and require additional SNF information and/or more calibration standards.
- All of the systems considered require some degree of development, which will require from less than one year to four years. Included in this development process should be a performance demonstration under realistic conditions to confirm system capability.
- NDA/NDE systems can likely be developed to measure the standard canisters being considered for co-disposal of DOE SNF. This ability would allow the preparation of DOE SNF for storage now, and the characterization and certification to be finalized later.

The information provided in this report may be useful to the NSNFP and the SNF interim management sites in the following activities:

- NDA/NDE may be useful in monitoring the condition of SNF and canisters during interim storage. This could avoid or reduce the need to open canisters after loading.
- The role of NDA/NDE systems in the tentative characterization and certification plans can now be established. If it is assumed that existing data will require qualification, then NDA/NDE may be useful in either a confirmatory test or primary data role.
- This evaluation also provides useful input to the development of acceptance criteria. If acceptance criteria are to be negotiated with the Office of Civilian Radioactive Waste Management System (RW), Management and Operating (M&O) Contractor and the Nuclear Regulatory Commission (NRC), it is crucial to have a realistic understanding of the achievable performance of NDA/NDE systems in order to avoid unattainable agreements.

If you have any questions regarding this report, please call C. L. Bendixsen, 208-526-3486.



D. L. Batt, Manager  
National Spent Nuclear Fuel Program

AJL:cm

Enclosure

Distribution

ANL-W  
R. G. Pahl

BAPL  
C. Detrick

BECHTEL-JACOBS ORNL  
D. W. Turner

Distribution  
September 30, 1998  
DLB-86-98  
Page 3

CONTRACTOR SNL

K. D. Bulmahn

DOE-HQS

K. A. Chacey

DOE-ID

J. H. Boyd, MS 1154

DOE RL

R. G. Holt

DOE SRS

W. D. Clark

DOE YMSCO

P. Harrington

FLUOR DANIEL HANFORD

R. L. McCormack

INEEL

C. L. Bendixsen, MS 3135 *CL Bendixsen*

S. C. Gladson, MS 3135

T. J. Hill, MS 3135

A. P. Hoskins, MS 3114

W. L. Hurt, MS 3135

A. J. Luptak, MS 3135 *aj Luptak*

P. D. Wheatley, MS 3135

SNL

K. B. Sorensen

TRW LV

D. A. Nitti

WSRS

M. Barlow

Distribution (Electronic)

ANL E

R. Einziger  
R. Klann  
L. Nunez

ANL W

S. Aumeier  
W. Mosby

LANL

M. Abhold  
M. Pickrell  
P. Rinard

INEEL

J. Cole  
C. A. Dahl  
R. D. Denney  
M. A. Ebner  
D. L. Fillmore  
J. Hartwell  
C. K. Kimball  
J. G. Linhart, Outplant  
R. M. Neilson,  
E. L. Shaber  
C. Shelton-Davis

NR LV

J. Smyder

ORNL

J. Chapman  
T. Valentine

PNNL

T. Bowyer  
R. Brodzinski  
D. Stromswold

Distribution  
September 30, 1998  
DLB-86-98  
Page 5

SNL

D. R. Anderson  
C. Olson  
L. Sanchez  
T. L. Sanders

TRW LV

J. S. Clouet

WSRS

T. Adams  
B. Howard  
W. Swift

cc: D. L. Batt Ltr Log  
NSNFP File 5737.5.3